

## NOTES, ABSTRACTS, AND REVIEWS.

## DEGREE OF PROBABILITY OF FORECASTS.

A foot-note attached to Mr. C. Hallenbeck's article in the *MONTHLY WEATHER REVIEW* for November, 1920, page 645, "Forecasting precipitation in percentage of probability," calls attention to the fact that a plan for expressing the degree of assumed reliability of a forecast numerically was suggested by Freiherr von Myrbach in 1913, and that a method of this character was used by the military meteorologists of the allied armies during the late war. It appears, however, that the history of such forecasts extends back much further. An ingenious mathematical method of predicting the percentage of probability of rainfall from the values of the principal meteorological elements at an observation hour is set forth in Dr. Louis Besson's article "Essai de prévision méthodique du temps, in *Annales de l'Observatoire Municipal de Montsouris*," volume 6, 1905, pages 173-495, which anticipates to a large extent the article by Dr. Bruno Rolf, *Probabilité et pronostics des pluies d'été* (Upsala, 1917). Moreover, a system of weighted forecasts was actually used by the official forecasters of western Australia from the beginning of the year 1905, as described by Mr. W. E. Cooke in the *MONTHLY WEATHER REVIEW* for January, 1906, pages 23-24. The question of adopting such a plan in the United States Weather Bureau has recently been under discussion.—C. F. T.

SOME SEVENTEENTH CENTURY IDEAS ABOUT THE WEATHER.<sup>1</sup>

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Pepys can not claim to be considered as a meteorologist; his references to the weather are such as anyone might make in writing a diary or in correspondence. Sometimes a month or more passes without any reference to the weather; when Pepys was with the fleet or going down the Thames by water references are more numerous, as might be expected. It should be noted that Pepys' memory for meteorological events was not always good, and his remarks on the worst or best weather he remembers must be taken with caution; for instance, he says that the night of July 13, 1667, was so hot that he lay with only a rug and a sheet over him, the first time certainly since he was operated on for stone (March 26, 1658), probably the first time since he was a boy; on July 15, 1668, it was so hot that again he lay with only a rug and a sheet over him, "the first night that I remember in my life that ever I could" do so.

The following is a short summary of the weather of the different years:

1660. The year began with a hard frost and snow; it thawed on January 10, but froze again in the middle of the month. From the end of March to the end of May, Pepys was with the fleet under Lord Sandwich, first in the Thames, then off Deal, and finally off the Dutch coast, whence the King was brought back to England. During this time weather notes are very numerous, but there is nothing very remarkable to record except very bad weather from the 11th to the 20th of May, with apparently an onshore wind at Scheveningen, which is recorded as being exceptional for the time of year.

There is nothing very noteworthy during the rest of the year, except a few days' frost in the second half of November.

1661. The early part of the year was very warm; roses were in leaf on January 21, the roads were dusty, and many flies were about. February 19 is mentioned as "the first winter day we have had this winter," but even then it was raining, and there is no reference to frost or snow. On April 23, Coronation Day, there was a severe thunderstorm. May was wet, and by June 2 they began "to doubt a famine." There were slight frosts in the early part of December.

1662. The winter was again very warm, "which do threaten a plague," and January 15 was "a fast day ordered by Parliament to pray for more seasonable weather." There was a frost on the 26th, but apparently an isolated one. Some time just before February 25 there was a great gale which did widespread damage to trees. May was very fine and warm. The rest of the summer and autumn calls for no remark. On November 27 there was a fall of snow, "which is a rare sight, that I have not seen these three years." This was the beginning of a cold spell; there was skating in St. James's Park by December 1 and there was heavy snow on the 7th and 10th. On the 12th there was a sudden thaw, but there was still ice in the park on the 13th, when the Duke of York "would skate although the ice was dangerous." The thaw must have been both sudden and intense, as two of the Admiralty officials were nearly drowned on their way to Portsmouth.

1663. There was frost from February 1 or perhaps earlier, till the 13th, with skating in the park; then came "a monstrous thaw," and rain on the 17th. In March the weather was very changeable, with a thunderstorm on the 15th and sleet on the 29th. The beginning of May was very hot, with a thunderstorm on the 5th, which caused extensive floods near Northampton. The summer was very wet. Prior to June 30 the weather had been wet for "two or three months together," and on July 21 "Parliament kept a fast for the present unseasonable weather"; nor are there signs of any improvement later in the summer; on August 28 there was "a very great frost they say abroad, which is much, having had no summer at all almost." Early in December there was some frost and snow, but it became warm again on the 10th.

1664. This winter seems to have been exceptionally warm on the whole; a little snow on March 21 is contrasted with the general mildness of the previous months. The summer was remarkable for numerous thunderstorms; "there was more thunder this year than of any man's memory, and so it seems in France and everywhere else." On August 10 there was a great thunderstorm, "with such continuous lightnings, not flashes but flames, that all the sky and ayre was light; and that for a great while, not a minute's space between new flames all the time." Toward the end of December a frost set in.

1665. The frost continued till January 18, when it thawed, but it froze again, and on the 26th mention is again made of "a change of the weather from a frost to a great rain." There were frosts in February and March, and on March 26 Pepys says, "The last winter hath been as hard a winter as any have been these many years." This was the year of the great plague of London, but the summer appears to have been normal. On November 22 a frost began which lasted till the end of the month or later; it then seems to have been warm till December

<sup>1</sup> Quotations from the Diary of Samuel Pepys on the weather.